

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.

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U.S. PATENT AND TRADEMARK OFFICE  
BOARD OF PATENT APPEALS  
AND INTERFERENCES

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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Ex parte JOHN S. TULLOCH and MARK C. JENNINGS

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Appeal No. 2005-0858  
Application No. 09/437,226<sup>1</sup>

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HEARD: June 7, 2005

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Before RUGGIERO, LEVY and SAADAT, Administrative Patent Judges.  
SAADAT, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal from the Examiner's final rejection of claims 1-25, which are all of the claims pending in this application.

We reverse.

BACKGROUND

Appellants' invention is directed to a method for non-destructive testing of wires and cables to inspect their integrity using infra-red thermography which locates defects by identifying the regions of greater intensity of heat.

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<sup>1</sup> Application for patent filed November 10, 1999.

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Representative independent claim 1 is reproduced below:

1. A method for inspecting the integrity of insulation of an insulated wire or cable including the steps of:

passing a current through said wire or cable,

applying a fluid having electrolytic properties to said wire or cable, and

using a thermal imaging system to detect and display the intensity of heat emanating from said wire or cable.

The Examiner relies on the following references in rejecting the claims:

Marquez-Lucero et al. (Marquez-Lucero)	5,574,377	Nov. 12, 1996
Piety et al. (Piety)	5,637,871	Jun. 10, 1997

Keiji Ogura et al. (Ogura), "Development of Thermographic NDT for the Damage Inspection in Carbon Fiber Reinforced Plastics," Proceedings of the First US-Japan Symposium on Advances in NDT, (1996), pp. 420-425.

Patricia L. Cahill et al. (Cahill), "Aircraft Electrical Wet-Wire Arc Tracking," Federal Aviation Administration Technical Center, (Aug. 1998), pp. 1-18.

Claims 1, 2, 4-7, 12-14 and 16-25 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Cahill and Ogura.

Claim 15 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Cahill and Ogura and further in view of Marquez-Lucero.

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Claims 3 and 8-11 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Cahill and Ogura and further in view of Piety.

Rather than reiterate the opposing arguments, reference is made to the briefs and answer for the respective positions of Appellants and the Examiner. Only those arguments actually made by Appellants have been considered in this decision. Arguments which Appellants could have made but chose not to make in the brief have not been considered (37 CFR § 41.67(c)(1)(vii)).

#### OPINION

In rejecting claims under 35 U.S.C. § 103, the Examiner bears the initial burden of presenting a prima facie case of obviousness. See In re Rijckaert, 9 F.3d 1531, 1532, 28 USPQ2d 1955, 1956 (Fed. Cir. 1993). The conclusion that the claimed subject matter is obvious must be supported by evidence, as shown by some objective teaching in the prior art or by knowledge generally available to one of ordinary skill in the art that would have led that individual to combine the relevant teachings of the references to arrive at the claimed invention. See In re Fine, 837 F.2d 1071, 1074, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988). Furthermore, the Examiner must produce a factual basis supported by teaching in a prior art reference or shown to be common

knowledge of unquestionable demonstration, consistent with the holding in Graham v. John Deere Co., 383 U.S. 1 (1966). Such evidence is required in order to establish a prima facie case. In re Piasecki, 745 F.2d 1468, 1471-72, 223 USPQ 785, 787-88 (Fed. Cir. 1984); In re Cofer, 354 F.2d 664, 668, 148 USPQ 268, 271-72 (CCPA 1966).

With respect to the rejection of claims 1, 2, 4-7, 12-14 and 16-25 over Cahill and Ogura, Appellants argue that Cahill merely tests various types of wire insulation materials to determine their resistance to the effects of wet-wire arcing due to known defects (brief, page 13). However, Appellants add that these defects are intentionally induced in known locations (id.). Appellants further argue that Ogura is also unrelated to detecting and displaying the integrity of wire insulation and instead, tests carbon fiber reinforced plastic panels (brief, page 14). We also note Appellants' admission that detecting the heat emanating from a damaged wire or cable for inspection purposes is known, whereas the claimed invention provides for the use of an electrolytic fluid for such inspection to reveal damaged insulation in areas that would not have been easily detected by using the conventional method (brief, page 15).

In response, the Examiner asserts that the fact that the wire insulation has been intentionally cut in Cahill does not conflict with its teachings related to a method of testing (answer, page 10). The Examiner apparently considers the preamble language describing a "method for inspecting the integrity of insulation of an insulated wire" to have no bearing on the claimed method steps including the step of "applying a fluid having electrolytic properties to the wire" as a part of the inspection method (answer, page 11). We do not agree with the Examiner's limited interpretation of the claimed feature such that testing a wet wire alone reads on the recited language. Not only is the requirement of applying the fluid to the wire simply one of the steps necessary for the inspection of the wire, Appellants' disclosure also clearly explains how the use of such fluid enhances the detection of the defect in the areas that are difficult to reach or see (page 6, first full paragraph).

We also remain unconvinced by the Examiner's argument that the intentional cut in the wire is still a defect that is detected (answer, page 12) since the goal of Cahill is to identify the types of insulation materials that withstand wet-wire tracking the most (Cahill, page 1). Cahill further performs the tests by using different types of fluids that may be present,

for example, around the wiring in a plane during flight (Cahill, page 2), to determine which insulation material provides the most resistive and durable insulation for wet wires. Thus, we agree with Appellants (oral hearing) that Cahill has no intention of detecting the defects since those defects are already present and their locations are known whereas the claimed subject matter relates to a method for detecting defects whose locations are to be identified by performing the claimed inspection method.

Ogura, on the other hand, teaches damage inspection in carbon fiber reinforced plastics using a thermographic image of the sample. Although as noted by the examiner (answer, page 13), the sample is heated for showing the temperature distribution on the surface of the sample and identifying the shape and size of the defect, the Examiner has pointed to no specific teaching, nor do we find any, in Ogura that relates to detecting defects in wires using an electrolytic fluid. Thus, the prior art evidence relied on by the Examiner fails to teach the claimed subject matter or motivate the skilled artisan to combine the prior art teachings and provide for the missing method step.

In view of our analysis above, we find that the Examiner has failed to set forth a prima facie case of obviousness with respect to claims 1, as well as claims 2, 4-7, 12-14 and 16-25

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dependant thereon. Accordingly, we do not sustain the 35 U.S.C. § 103 rejection of claims 1, 2, 4-7, 12-14 and 16-25 over Cahill and Ogura.

With respect to the rejection of the remaining claims, the Examiner further relies on Marquez-Lucero for using an oscilloscope and on Piety for using a recording means for recording the detected images (answer, page 8). However, neither of these references overcomes the deficiencies of the combination of Cahill and Ogura as discussed above with respect to claim 1. Therefore, the 35 U.S.C. § 103 rejection of claim 15 over Cahill, Ogura and Marquez-Lucero and of claims 3 and 8-11 over Cahill, Ogura and Piety cannot be sustained.

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## CONCLUSION

In view of the foregoing, the decision of the Examiner rejecting claims 1-25 under 35 U.S.C. § 103 is reversed.

REVERSED

*Joseph F. Ruggiero*  
JOSEPH F. RUGGIERO  
Administrative Patent Judge

  
STUART S. LEVY  
Administrative Patent Judge

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